

Neuronia pardalis Walker near New York City.—As a contribution to faunistics it would seem to be desirable to place on record one of the largest and most beautiful of the Trichoptera as occurring within our local bounds. An examination of the last edition of Professor Smith's List of the Insects of New Jersey indicates that he was not aware that *Neuronia pardalis* Walker had a place among the insects of that state, nor have I found it recorded from this neighborhood in New York. It was my good fortune while sweeping the roadside herbage at Lakehurst, New Jersey, at dusk on the 5th of June, 1909, to find in my bag a perfect adult specimen of this caddisfly. Another specimen now in the collection of Mr. William T. Davis, of Staten Island, bears a label attesting its capture by Mr. Frank E. Watson near Ramapo, New York, on June 7, 1908. So far as I have been able to learn these are the only two instances of the taking of this insect within our local limits.—LEWIS B. WOODRUFF.

PROCEEDINGS OF THE NEW YORK ENTOMOLOGICAL SOCIETY.

MEETING OF JANUARY 21.

A regular meeting of the New York Entomological Society was held January 21, 1913, at 8:15 P. M., in the American Museum of Natural History, Vice-President Chas. L. Pollard in the chair, with seventeen members and three visitors present.

The curator reported the receipt of important donations to the local collection including 169 Neuropteroids, representing 142 species, obtained from Nathan Banks, making that part of the collection 80 per cent. perfect; and a collection of Thysanoptera obtained from J. Douglass Hood.

The vice-president then opened the Symposium on Insects of Mesophytic Environment.

Dr. Lutz, speaking of the environment itself, said that it might be regarded as the climax of the evolution of environment, represented in forests of oak-chestnut-beech and in meadows rich in clovers, which forests and meadows must by the laws of plants result from natural processes. The question was, however, if it could be shown that insects followed the same laws.

Mr. Leng, speaking of the beetles of Mesophytic Environment, expressed the opinion that food for beetles constituted a more important factor than moisture, and a wish that this, being recognized, might lead to a more general use of pin labels recording food plants and habits.

Mr. Harris said that the Cicindelidæ being predaceous in all stages would exhibit no direct relation with plants. He also referred to the color differences of *C. consentanea* and *patruela* and later of *C. modesta* and *rugifrons*.

Mr. Dow spoke of the color differences in *C. santa-clarae* and *C. anita* and said the darker form preponderated in August.

The subject was discussed by Messrs. Schaeffer, Davis, J. W. Angell, Leng and Dr. Lutz, the latter pointing out that the great influence on pigmentation of differences in temperature and humidity was well established, especially when applied to pupa or imago just after emergence.

Dr. Lutz, referring to the bearing of food on environment, said that while it was manifest that no insect could exist without food, the question was why their distribution was not coëxtensive with that of the food. Parasites had been suggested as a possible explanation, but the bearing of a multiplicity of other restraining factors remained to be investigated. He pointed out that the societies of aquatic insects already shown to exist clearly proved that food could not be regarded in all cases as the prime factor.

Mr. G. W. J. Angell referred to the paucity of Chrysomelidæ in the Hawaiian Islands.

Mr. Dow and the vice-president discussing this subject brought out that in some families the flora was largely imported.

Messrs. Harris, Schaeffer and Davis discussing the Cicindela color question further brought out that green forms (*rugifrons*) occurred at the eastern end of Long Island, while the black form represented usually by spotted examples (*modesta*) was found at the western end, with an occasional immaculate specimen resembling the *nigrior* of Alabama, etc. It was suggested after the meeting closed that the two colors might have originated through the influence of temperature and humidity operating in different regions on branches of the original stock, and the present occurrence in the same region of the descendants of the two forms be the result of subsequent dispersal and overlapping territory.

Mr. Barber said that many Hemiptera being plant feeders are necessarily restricted to the distribution acquired by the food plant, but as in the Coleoptera they frequently fail to follow the food plant throughout its range.

Mr. Davis said that of the 154 Orthoptera found in New Jersey 125 might be classed as mesophytic; they were as a rule general feeders, some attacking conifers only but for the most part incapable of classification by food. Some, on the other hand, are confined to a certain physical environment as that of the beach, and such would be found on similar white sand back from the shore.

Dr. Lutz pointed out that the preponderance of species of insects in mesophytic environment was in keeping with the preponderance of mesophytic plants, which in number of species far exceeded that of other environments.

Mr. Grossbeck said that Lepidoptera were so absolutely tied to their food plants that no useful facts could be drawn from them.

Mr. Engelhardt said that moisture might in certain cases be as injurious to insects as it was beneficial to plants. Commenting on the great value of food plant labels he instanced the rare Sesiide, *Albuma pyramidalis* var.

coloradensis, described from Colorado, found by Mr. Schaeffer on Long Island, and by himself in Newfoundland, and said that were the food plant known a species of such wide range might be more often caught.

Mr. Schaeffer said that the food plants east and west often differed and the vice-president remarked that even where the food plant was plentiful the insect might remain rare.

Mr. Leng, replying to the criticisms of Dr. Lutz, said that he was anxious to simplify the environment question as much as possible to the end if possible of creating a strong feeling in favor of environmental labels; that unknown factors undoubtedly operated in restraint of the food factor, but the investigation of such should not be allowed to retard the useful work of recording food habits.

Mr. Dickerson said that he desired to emphasize the importance of such records of food habits and hibernation habits from an economic standpoint. He said that the plum curculio for instance and the sweet potato flea beetle could be attacked more successfully were their hibernating habits known. Economic entomologists depended largely upon the original work of collectors for such information, and he desired to indorse strongly the super-importance of recording all facts observed in the field bearing on food or shelter.

MEETING OF FEBRUARY 4.

A regular meeting of the New York Entomological Society was held February 4, 1913, at 8:15 P. M., in the American Museum of Natural History, President Dr. Raymond C. Osburn in the chair, with sixteen members and four visitors present.

The curator reported the addition to the local collection of a notable number of scale insects, representing 75 of the 88 species named in Smith's List of New Jersey Insects.

The president re-appointed Messrs. Grossbeck and Engelhardt as field committee, designating Mr. Grossbeck as chairman at Mr. Engelhardt's request. For the field committee, Mr. Grossbeck gave notice of a field meeting on February 22, at the old iron ore mines on Staten Island, under the guidance of Messrs. Davis and Leng; sifting under cover, if necessary on account of weather, being the feature of the programme.

Mr. Schaeffer spoke on Temnochilidæ, exhibiting a portion of his collection. At the outset he expressed himself as strongly in favor of the law of priority, disclaiming responsibility for the published vote by which he was made to appear as being opposed thereto. Nevertheless, he was disposed to proceed slowly in adopting the alleged earlier name Ostomidæ for the family. Speaking then of the different tribes, genera and species, Mr. Schaeffer said that many of the species seemed to be of comparatively recent origin and possibly still in process of evolution, leading to some difficulty in fixing the limits of what should be regarded as individual variation. The resulting difficulty in constructing satisfactory synoptic tables of the differences between the species was increased by the decisive characters being often more accentu-

ated in the males, so that it became sometimes impossible to place unique females, of which several remained unnamed in his collection. As Mr. Schaeffer's results will later be published in full in the Bulletin of the Brooklyn Institute, it is only necessary here to refer to his complete revision of the genus *Temnochila* (formerly *Trogosita*) in which the variety *nyenta*, named by Mr. Dow in honor of our Society, becomes raised to specific rank; and the differences in structure, color, punctuation, etc., observed in the forms occurring in our different faunal regions are minutely described. In closing, Mr. Schaeffer spoke briefly of the Ostomini and said the species *Ostoma oblonga* and *grossa* should undoubtedly be stricken from our lists, the records upon which they had originally been included being unreliable.

Discussing Mr. Schaeffer's remarks on the law of priority, Mr. Leng said it seemed to him that the law which protected the specific name *virescens* and the generic name *Temnochila* because they were the first to be applied, should, in consistency, be invoked to protect the family name Trogositidæ because it in turn was the first to be applied as a name for the family; and he added that he believed the greatest opposition to the strict application of the law of priority came from those who, like Prof. Bradley, of Cornell, felt obliged to protest against such changes in established family names, though they were in sympathy with the law in other respects.

Mr. Schaeffer replied that it was customary to make family and tribal names derivatives of the oldest generic name contained therein, whereby they necessarily changed when the discovery of the prior description of the genus necessitated a change in its name; moreover, a desirable accordance with European practise was thereby attained. However, he admitted that Trogositidæ was in fact the first name to be applied to the family in question.

Mr. Dow exhibited a collection of the genus *Dynastes*, calling attention to a new form from Prescott, Ariz., differing from *grantii* and *tityus* in having the cephalic horn simple like *tityus* and the thoracic horn forked like *grantii*, and added that an examination of over 300 specimens failed to show any intergrading forms.

Mr. Schaeffer said that variations of this nature were not unusual in Dynastini, and had not been regarded as worthy of names heretofore. Differences even greater had been simply referred to as ♂ major and ♂ minor.

Mr. Dow spoke of the environment and adaptations of Temnochilidæ, giving also some interesting facts as to derivation of specific names in this family. Thus the first specimens being discovered in a cargo of grain from Morocco led to the specific name *mauretanica* and the generic name *Trogosita* meaning "gnawer of grain" though we know now that grain-eating larvæ constitute the actual food. Later Mr. Dow quoted Chittenden as authority for a statement that such carnivorous larvæ could in a case of necessity subsist on the grain itself. The name *virescens* also Mr. Dow said had no connection with color, but referred to the long sparse setæ of the mentum suggesting to the author the first growth of hair on the adolescent human chin. In respect of habits, Mr. Dow divided the family into three groups, the first semi-cylindrical in form, adapted to enter burrows, to feel their way in

the darkness of such by their setæ, and to maintain fierce combat with the owner of the burrow by means of powerful mandibles, as when bulldog meets woodchuck. He also pointed out the concealment of sensitive parts like antennæ, and the concurrence of seasonal appearance with that of the prey. The second group becomes flattened in form and has the same protection for eyes and antennæ. The larvæ are provided with a terminal hook which can be erected in a threatening manner like the tail of Staphylinidæ, but is equally harmless and possibly useful in retrograde movements. Ants are sometimes dangerous to such larvæ and their extreme flatness, enabling them to enter minute crevices, aids them in escaping such enemies as well as in finding food. Mr. Dow expressed his sympathy with the labor undergone by such insects and Cleridæ in finding their food, which is mainly scolytid larvæ, for he pointed out the woody tissue passing through such larvæ blocks the tunnel more or less making a long hard job for the Temnochilid larva to earn his dinner. He also referred to the similarity in size, not more than 5 per cent. difference in waist measurement being observed. Eventually also the supply of scolytid larvæ is exhausted and the Temnochilid adults must "treck or starve, that's what make 'em leave home" in Mr. Dow's opinion. The third group consists of forms which apparently subsist on fungus. These mimic certain Tenebrionidæ and have similar distribution. Mr. Dow gave details of his investigation of the tunnels made by *Diaperis hydni* and *Thymalus fulgidus* larvæ, and stated that the tunnels made by the two insects never met, so that there was no possibility of the latter devouring the former.

His remarks were discussed by Messrs. Comstock and Schaeffer.

Mr. Comstock exhibited *Thecla wittfeldi* and mentioned each specimen known to him, and the Floridian locality from which it came. His paper will be printed elsewhere in full.

Mr. Davis in reply to a question said the three specimens caught by him were taken in upland oak lands, comparatively dry places, but near Lake Hollingsworth and Lake Parker, at Lakeland, Fla., May 6.

He also pointed out that another specimen was in Mrs. Slosson's collection raised from a full-grown caterpillar.

Mr. Grossbeck said he was not confident that all the specimens enumerated were identical with the type, there being a marked difference in size as well as in the bands of color. It was true that the color character was known to vary in all allied species, *T. calamus*, but not the size as well.

Mr. Davis recorded the occurrence of *Anthonomus scutellaris* on Staten Island May 7 and 25, on beach plum.

Mr. Schaeffer said it had been found on Long Island and at Lakehurst, but that the food plant had not been previously recorded.*

Mr. Davis exhibited two boxes of *Catocala* caught in Florida embracing the species *ilia* and *micronympha* found at LaBelle and *amica* and *coccinata*

* During the reading of these minutes it was stated that this species had been found on flowers and on scrub oak, probably accidental occurrences, its actual food plant being beach plum.

var. *sinuosa* found at Lakeland, and commented on the large numbers in which some of them occurred on oak trees at LaBelle, sometimes three being caught at once. The *C. micronympha* especially mimic the bark on which they rest so perfectly that it was necessary to pass a stick up and down the bark to avoid the risk of overlooking some.

Mr. Grossbeck, commenting further at Mr. Davis's request, pointed out the interesting and rare varieties included in Mr. Davis's collection, such as var. *gisela* of which only two specimens were in the Museum Collection, and var. *sinuosa* of which only two or three were in existence in all collections.

Mr. Grossbeck recorded the observation of *Euvanessa antiopa* in flocks of a dozen to twenty, flying in a northerly direction from the outlying islands to Freeport, L. I., on October 3, 1912, by Mr. H. Thurston. It was conservatively estimated that 500 specimens were thus seen migrating.

MEETING OF FEBRUARY 18.

A regular meeting of the New York Entomological Society was held February 18, 1913, at 8:15 P. M., in The American Museum of Natural History, President Dr. Raymond C. Osburn in the chair, with twenty-four members and two visitors, Dr. Frederick A. Lucas, director of the American Museum, and Dr. William Barnes, present.

Dr. William Barnes, Decatur, Ill., was nominated for active membership by Mr. Davis.

On motion the by-laws were suspended and Dr. Barnes was immediately elected.

Mr. C. H. Roberts read a paper entitled "Critical Notes on the Species of Haliplidæ of America north of Mexico with Descriptions of New Species" and exhibited his collection. As this paper will be printed in full in the JOURNAL, no abstract is given here.

The paper was discussed by Messrs. Weeks, Schaeffer, Sherman and Leng, the latter pointing out that while the genus *Cnemidotus* was properly described by Erichson in 1832, the name itself had been proposed in 1802 for a species of *Haliplus*, becoming thereby a synonym, so that the substitution of *Peltodytes* by Regimbart in 1878 was a proper course.

The president opened the Symposium on Insects of Carrion and Excrement by general remarks, tracing particularly the possible origin of the habit.

Mr. Leng read a paper on "Beetles of Carrion and Excrement," in which he pointed out that while beetles like *Silpha* are confined to carrion, beetles like *Canthon* to excrement, and beetles like *Necrobia* to predaceous attacks upon other insects attracted by carrion and excrement, there were besides many beetles in which the habit was less exclusively developed until finally the boundary became vague. He referred also to the factors controlling the distribution of such insects, particularly the adaptability of some genera like *Cercyon*, leading to their wide distribution.

Mr. Weeks spoke of the Staphylinidæ frequenting excrement with predaceous designs, stating that he had seen them jumping at flies. He spoke also

of the theft by a female *Canthon* of a ball prepared and rolled some distance by another pair; and of the similar balls occasionally made by *Phanæus*.

This subject was further discussed by Mr. Davis, who referred to the depth of the holes made by *Copris*, reaching 24 inches at times, but varying with the character of the soil; and the fact that chance often determines the location of the hole, as he had seen the imprint of a pig's foot turned to account. He said it was evident that the material of the ball was all the *Canthon* larva had to eat, for the balls were often a distance from the manure.

Mr. Bischoff speaking of the balls made by *Phanæus carnifex* said that no ball was made when the ground beneath the excrement was suitable for digging, but when it was rocky or very hard the beetles formed the ball and rolled it to softer ground.

Mr. Dow said his first *Necrophorus vespilloides* was caught burying the butterfly *Vanessa antiopa*.

Mr. Angell speaking of *Deltochilum* said that it was apparently not always attracted by excrement, as Brownwell had written him of finding it at night about small trapped mammals at Cape Sable, Fla.

Mr. Schaeffer spoke of *Geotrupes chalybeus* having been attracted in Florida by stale urine.

Mr. Davis referred to his article on "Owl Pellets and Insects" in Vol. XVII of our JOURNAL (June, 1909) in which the capture of *Trox erinaccus* and *T. seaber* attracted by the hair contained in the pellets is mentioned.

Mr. Shoemaker spoke of *Phanæus carnifex* observed rolling balls in Maryland.

Mr. Barber, speaking of the Hemiptera of Carrion and Excrement, said that instances of their occurrence in such environment were rare, though some were certainly fungus feeders; the observation by Mr. Engelhardt of *Corynocoris typhaeus* in a dead turtle being a remarkable exception. Bedbugs have also been found on dead animal matter.

Mr. Davis said he had found *Apiomerus crassipes* three times on manure piles and thought it was waiting for insects to come within its reach.

Mr. Weeks added that the predaceous Reduviidæ were often found in such situations.

Dr. Osburn said he knew of no dragon flies or stone flies attracted by excrement or carrion; and that such matters seemed to be avoided by primitive insects.

Mr. Sleight said the Trichoptera would be found on decaying vegetable matter but not in manure.

Mr. Dickerson called attention to page 34 of Smith's List, in which the occurrence of spring-tails (Collembola) in manure beds is recorded.

Mr. Barnes speaking of Lepidoptera said that no instances of larvæ living in excrement or carrion could be cited, but that such matters often attracted imagos. He mentioned *Papilio indra* seen in Colorado about a buried dead mule, and *Argynnis meadii* in Idaho on dead sheep; besides frequent occurrences on decayed fruit.

Mr. Grossbeck added that the species of *Euwanessa*, *Vanessa* and *Grapta* are frequently seen in orchards about piles of decaying vegetable matter. He also mentioned *Basilarchia ursula* as common on manure, and the finding of eight *Thyris lugubris* on a dead snake at Lakehurst.

Mr. Shoemaker mentioned finding *Basilarchia proserpine* on a dead woodchuck.

Mr. Woodruff said he had seen *Thyris lugubris* on a dead snake and a dozen at once on human excrement.

Mr. Olsen also mentioned the occurrence of diurnal Lepidoptera on dead snakes, and Mr. Franck said the imagos of Lepidoptera were often attracted by decaying matter.

Mr. Schaeffer added that he had found their larvæ in decaying cactus.

Mr. Davis said that Tineid moths, feeding upon garments of wool and hair, must be considered among carrion feeders, like *Trox* among beetles. He cited *Trichophaga tapetzella*¹ which he had found on owl pellets containing much hair, and whose work therein is more fully described in Proc. S. I. Ass. A. and S., I, p. 85, 1906.

Dr. Osburn then spoke of the Diptera, in which the families Sarcophagidæ, Scatophagidæ, and Muscidæ are largely scavengers, as well as many Syrphidæ and scattered species in other families. *Volucella* for instance, feeding on bees that die in the nest and *Microdon tristis*, inquilinous in ants' nests. Species feeding directly on excrement are *Syritta pipiens* and *Eristalis tenax*, the latter following privy vaults around the world. The transition from feeding upon decaying vegetable matter to excrementitious matter is readily traced in Diptera.

Mr. Dickerson spoke of tracing flies which were troublesome in spotting peonies at Fairlawn, N. J., to a foul mass of skin and hair about three fields back in which thousands of flies and maggots and many *Trox* were found.

Dr. Osburn speaking of ants said that a tiny red ant common in Tortugas devoured dead insects with such speed that insects left exposed for an hour were entirely eaten; and they were made even useful in cleaning skeletons. He described the long lines of these ants proceeding from the nests.

Mr. Davis said the tiny red ant was very likely *Monomorium pharaonis* Linn. often found in houses in warm regions, a cosmopolitan species which he had found even in New York City.

Mr. Woodruff recorded the occurrence of the caddis fly *Neuronia pardalis* at Lakehurst and Ramapo, the latter being a capture by Frank E. Watson, now in Mr. Davis's collection.

Dr. Barnes, upon invitation, spoke of his collection of Lepidoptera, saying that his effort for thirty-five years had been to have specimens compared with the type, labeled to show location of type, type locality, where description could be found and food plant, so as to avoid frequent unnecessary reference to literature. About 1,000 to 1,200 actual types have been accumulated, and

¹ This name is erroneously printed *tapetiella* in Smith's List of the Insects of New Jersey, p. 574.

accessions of 50,000 specimens were made this year. Dr. Barnes deplored the occasional lack of harmony among the workers in Lepidoptera, giving some instances from his own experiences.

The subject of sectional cases for large growing collections was discussed by Dr. Barnes and Messrs. Schaeffer, Davis, Angell and Engelhardt.

MEETING OF MARCH 4.

A regular meeting of the New York Entomological Society was held March 4, 1913, at 8:15 P. M., in the American Museum of Natural History, Mr. G. W. J. Angell, the Society's first president, in the chair in the absence of the president and vice-president, and 20 members present.

The curator reported that the local collection of Lepidoptera is now 95 per cent. perfect in Rhopalocera, 100 per cent. in Sphingidæ and Saturnidæ and 91 per cent. perfect in Geometridæ, and that the spiders of the local collection include about 60 per cent. of the 324 believed to occur within 50 miles of New York City, and that with the coöperation of Mr. J. H. Emerton it would be further enlarged. He spoke of the ease with which members not personally interested in spiders could collect them in the field by putting in alcohol and Mr. Emerton's willingness to name such captures.

The field committee reported a successful outing on February 22 at Staten Island, in which ten members and four visitors participated in sifting.

Mr. Engelhardt spoke on "Lepidoptera from Newfoundland and Labrador, collected in July and August, 1912," describing the localities visited, showing their character by geological map and photographs thrown on the screen by the radiopticon, and exhibiting specimens of the species obtained, a list of which will be published later. Mr. Engelhardt emphasized the facts that at Port aux Basques exceedingly boreal conditions were encountered, foggy, misty weather, much bog and bare granitic rock; all exposed to strong sea gales; while 10 miles further north, passing the natural barrier of the Cape Ray Mountains, a complete change occurred with extensive sand dunes and carboniferous rocks supporting a vigorous vegetation. Between these two stations nearly all the species of the west coast would be found, making the expense of further travel unnecessary, though the more inland Codroy region would probably repay investigation, and the Lepidoptera of the east coast would also eventually require attention. He frequently referred to the journey having been made too late in the season, stating that the Newfoundland season for Lepidoptera probably opened June 15, and the following four weeks up to July 15 would prove the best collecting, owing to the rapid development of northern insects. The species peculiar to Newfoundland and the more desirable species, generally speaking, were found in the barren and boggy regions, though the greatest number of specimens, in Noctuidæ especially, came from Spruce Brook, 50 miles inland and comparatively fertile and well wooded, the species represented being, however, more akin to those well known from New England. Speaking of particular species Mr. Engelhardt called attention to the variety *canadensis* of *Papilio glaucus*, of which

larvæ were found on alder, birch, bird cherry and willow, but more often the former; *Papilio brevicauda*, difficult to catch on account of its flying about *Epilobium* flowers, growing among tangled debris of forest fires; many larvæ of this species were, however, found in August on wild parsnip and about 30 pupæ are now on hand; *Brenthis myrina*, *Phyciodes tharos*, *Aglais milberti*, and other species were remarkable by the form or color exhibited; *Æneis jutta* was found only in the bogs and was hard to catch, as the treacherous surface made running impossible; also this species would light on lichen-covered trees where its protective coloring made it nearly invisible. The Newfoundland form of this species varies greatly from that found in British Columbia, and seems worthy of a varietal name. *Rusticus aster*, a species peculiar to Newfoundland, and sufficiently rare to be missing in the Museum collections of New York, Brooklyn and Washington, was represented by ♂ caught July 15 and ♀ August 10.

Agriades aquilo, a little blue butterfly, confined to subarctic regions, was found on Caribou Island, Battle Harbor, Labrador, clinging to lichen-covered rocks, taking to flight suddenly upon the appearance of sunshine, often flattened against the rocks by the wind, and leading apparently a precarious life for so delicate an insect. 24 diurnals in all were taken and indicate that the fauna is principally an extension from the northern temperate zone, in some instances from British Columbia right across the continent, with a tendency towards a darkening of the colors probably influenced by the moist climate. After commenting upon the Sphingidæ, Noctuidæ, Sesiidæ and Geometridæ, in which the same relationship and tendency to change in coloration were noted, and pointing out that Geometers could be found in bad weather clinging to the sheltered side of overhanging rocks, on tree trunks, etc., by careful inspection; that the boggy tops of the mountains yielded mainly the same insects as the lowland bogs; and the difficulties in moving about freely in search of Lepidoptera caused by the absence of roads, the impenetrable thickets, the nature of the bogs and the swarms of black flies.

Mr. Engelhardt closed by stating that the Labrador collection was too small to warrant drawing any conclusions, especially in the absence of a representation of the fauna of northern Newfoundland; and that while 150 species of Newfoundland Lepidoptera were shown, he believed it would be possible to collect 500 to 600 species by working from June 15 to October 1, in the varied environments afforded by the Island.

Mr. Grossbeck exhibited the Lepidoptera collected by Mr. Leng on the same journey, and called attention especially to three Geometers, *Hydriomena 5-fasciata* and *grandis* and *Petrophora pontiaria*, as common in the northwest but not previously known to occur east of Alberta; also a *Carsia* suffused with pale carmine apparently new unless identical with *labradorensis*. He also pointed out the small size of *Nephelodes minians* collected at Spruce Brook, and the dark hind wings of the *Heliophila luteopallens*, a character which chiefly distinguishes the western species *oxygale*. *Trichodezia albovittata* was another abnormal form, the oblique white band being almost twice as broad as in normal *albovittata* and two anterior lines strongly marked; and

Alcis guttata Hulst, Bay of Islands, Nfld., July 21, was the fourth specimen of the species thus far known; the two types came from Pennsylvania and New Jersey, a third specimen was caught at Ottawa.

Mr. Grossbeck also alluded to the close relation between certain Newfoundland and European forms as *Noctua baja* of Europe and *smithii* of America which Hampson claims are alike; *Pamphila palamon*; *Mesoleuca truncata* approaching closely *M. immanata*, etc.

Mr. Leng referring to Mr. Engelhardt's account of the west coast of Newfoundland said that Birchy Cove on Bay of Islands would probably prove better than Humbermouth; and that the Blomidon Mountains at the entrance to Bay of Islands, reaching an elevation of 2,150 feet, and attainable for collecting purposes via York Harbor, as well as St. Anthony on the east coast, should both be investigated before an effective comparison between the fauna of Newfoundland and Labrador could be made.

Mr. Hall spoke of Distribution of *Argynnis* (see Short Notes).

Mr. Grossbeck exhibited a number of caterpillars blown by Mr. Mattis, which were commented upon by Messrs. Davis, Lutz, Southwick and Engelhardt, especially in reference to the admirable preservation of the natural color. Mr. Engelhardt also described the methods he used.

Mr. Woodruff recorded an extension of the known range of the Deltoid moth *Bomolocha atomaria* described from Volga, So. Dak., and found by him at Litchfield, Conn.

MEETING OF MARCH 18.

A regular meeting of the New York Entomological Society was held March 18, 1913, at 8:15 P. M., in the American Museum of Natural History, President Dr. Raymond C. Osburn in the chair, with 19 members present.

The curator reported a donation from J. H. Emerton of 80 species of spiders.

Mr. H. H. Brehme, of Newark, N. J., was nominated for active membership by Mr. Grossbeck, seconded by Mr. Davis.

On motion the by-laws were suspended and the secretary instructed to cast an affirmative ballot, electing Mr. Brehme.

The president opened the Symposium on Parasitism and Symbiosis in Insects.

Mr. Comstock, after referring to the general treatment of the subject by Folsom, gave a list of local Rhopalocera and their recorded hymenopterous and dipterous parasites with numerous additions from his own and Mr. Watson's collection. Mr. Comstock described the emergence of various parasites, and spoke of other difficulties in raising larvæ, disease, cannibalism, attacks of Hemiptera and other predaceous creatures. Passing to *Feniseca tarquinius* of which the larva is predatory on woolly plant lice, he said the eggs were laid on alder stems within an inch or two of the groups of lice, the young larvæ crawling along the stem to them and, being covered with long hair, soon resembling the lice from the exudations with which they became covered.

The larvæ of Lycænidaë were also referred to, living often with ants; they can, however, be bred without ants.

Mr. Leng read a paper on "Parasitism in Beetles," mentioning a number of instances of parasitism in different degrees and pointing out that it was a development of the food habit. He exhibited some of the beetles referred to.

Mr. Davis exhibited a *Gordius* worm 28 inches long that had emerged from a water beetle, *Dytiscus harrisii*, and specimens of *Coscinoptera dominicana*, and the pupa cases from which they had emerged, the pupæ having been found in ants' nests at Newfoundland, N. J.

Dr. Lutz spoke of F. W. L. Sladen's "The Humble Bee, etc.," recently published, and the account there given of *Psithyrus* killing the *Bombus* queen and securing adoption by *Bombus* workers and their assistance in bringing up the parasite's brood; as well as the complete account of *Bombus* parasites in the fourth chapter.

Dr. Lutz also referred to the notes on the "Biology of *Chelonus texanus*," by Pierce and Holloway in the Journal Econ. Ent., V, Dec., 1912, in which is told how the adult *Chelonus* deposits its eggs in the eggs of its host, but the parasite emerges not from the egg, but from the pupa developed therefrom; and to "The Life History of *Tetrastichus asparagi*," by Russell and Johnston, in the same journal, in which it is shown that the adult *Tetrastichus* oviposits in the egg of the host, the parasitic larva lives in the larva of the host and the parasite pupates within the pupa of the host. He spoke in this connection of Silvestri's "Biologia del *Litomastix truncatellus*," a parasite which also oviposits in the egg of the host, but is polyembryonic and possibly pædogenic in alternate generations. Continuing Dr. Lutz mentioned and discussed the recent paper by Vernon L. Kellogg in The American Naturalist, XLVII, March, 1913, on "Distribution and Species Forming of Ectoparasites," in which the interesting fact is brought out that related species of birds may be infested by the same species of Mallophaga presumably because the environment for the parasites, *i. e.*, the body of the bird, has remained unchanged while that of the hosts has not.

Mr. Angell added to the Coleopterous inquilines mentioned by Mr. Leng the five species (3 Scarabacidaë, 1 Hisler, 1 Staphylinid) found in gopher holes in Florida.

Mr. Grossbeck exhibited specimens of *Tinea vastella*, a moth living in antlers of living deer, *Galleria mellonella*, the wax moth or honey moth and *Euclementia bassettella*, whose larva feeds on gravid females of *Kermes*, and read a paper on parasitic Lepidoptera, in which the recorded information was summarized. *Epipyrops anomala* feeding on Fulgorids; *Bradypodicola hahneli*, the sloth parasite, feeding on hair of living sloth (*Cryptoses cholapfi*), seen flying from the sloth as it fell to the ground as described by Dyar, *Chalcoëla iphitalis*, destroying the larvæ of *Apis* and *Polistes*, were mentioned, as well as the symbiosis or trophobiosis between Lycænid caterpillars and ants. Mr. Grossbeck closed with a reference to a Lycænid from India tending aphids for the honey secreted and caressing them with the forelegs.

Mr. Comstock spoke of the development of the forelegs noticed by De

Niceville in Malayan genera *Geridus*, *Alotinus*, etc., presumably for the purpose named by Mr. Grossbeck.

Mr. Davis exhibited a number of specimens from his collection illustrating parasitism and allied subjects, among which were *Cordyceps ravenclii*, a remarkable fungus on beetle larva; larvæ of Diptera found on land turtles in positions back of the neck or back of the legs where the host cannot dislodge them, making a hole in some cases as large as an English walnut and causing the death of the turtle from exhaustion, in other cases falling to the ground to pupate and leaving the turtle as good as ever; also three species of *Cuterebra* infesting rabbits; dipterous larvæ from the ear of a red-shouldered hawk; and *Gordius* worm from *Hemileuca* caterpillar.

Mr. Dickerson spoke of the little parasites less than $\frac{1}{32}$ inch long in cottony maple scale, exhibiting two forms known by different names, *Coccophagus flavo-scutellum*, the summer brood, and *Coccophagus lecanii* in hibernating scales, but possibly identical. He said also that while the Cynipidæ usually made galls, one species was known to be parasitic on cabbage maggot and supplied a further instance of eggs laid in host eggs. He referred also to the immense numbers in which parasites sometimes occurred in nature, for instance, the fall army worm might be 99 per cent. parasitized causing it to be almost missing the following year, and *Scolia dubia*, the wasp parasite of white grubs, had been seen in large numbers flying over a lawn at Hammonton, N. J., VIII, 27.

Dr. Lutz commenting upon the sloth parasites said the sloth has algæ on its hair in sufficient quantity to change the color of the hair and probably sufficient to supply the parasitic food.

Dr. Lutz exhibited a collection of Hippoboscids, degenerate Diptera, those feeding on sheep being destitute of wings. They are more abundant on birds, some on bats and few on mammals.

Dr. Osburn summarized the parasitic forms of Diptera, referring particularly to *Volucella* and *Microdon* as inquilines, *Eristalis* as occasionally found in human intestines, Muscidæ in wounds and nostrils, Cæstridæ causing warbles, etc. He spoke of the Conopidæ as all parasitic, being rapid flyers, laying their eggs on flowers whereby they might be carried to the nest by bees; and commented upon the rapidity with which winged forms of Hippoboscidæ leave the host after its death. He also referred to Chigoes, Culicidæ and Black Flies and the great variety of adaptations to be noted in parasites on different hosts, adaptations often paralleled in different orders.

Mr. Davis donated photographs of the field meeting of February 22.